ABSTRACT

A system and control unit (26) for transmitting and distributing multiplexed audio data over an optical network (32). The control unit (26) comprises an audio sampler (36), a microcomputer (34), and an optical network interface (40). The audio sampler (36) samples a plurality of electrical signals (42A-D) from transducers (22A-D) and generates a plurality of raw audio data streams (54A-D) from the electrical signals (42A-D). The audio sampler (36) is capable of sampling the electrical signals (42A-D) at a fraction of a frame synchronization rate (F_S) of the optical network (32). The microcomputer (34) has an audio processor function (56) and a multiplexer function (58). The audio processor function (56) is capable of processing the raw audio data streams (54A-D) to generate a single processed audio data stream (62) at the frame synchronization rate (F_S) of the optical network (32). The multiplexer function (58) is capable of generating a multiplexed audio data stream (66) having a plurality of frames (70). Each frame (70) has a plurality of time division multiplexed channels wherein a first channel within each frame is assigned to transmit the plurality of raw audio data streams (54A-D) and a second channel within each frame is assigned to transmit the processed audio data stream (62). The optical network interface (40) receives the multiplexed audio data stream (66) from the microcomputer (34) and generates an optical multiplexed audio data stream (50) based on the multiplexed audio data stream (66) from the microcomputer (34). There are also methods of transmitting and distributing audio using the above-described system.